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## Fuzzy Cognitive Mapping Analysis: Farmer 14

Natalie Minton

*University of Mississippi. Community-First Research Center for Wellbeing and Creative Achievement*

Delta Food System Partnership

Mississippi Delta Council for Farm Worker Opportunities, Inc.

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Fuzzy Cognitive Mapping Analysis  
Author: Natalie Minton  
University of Mississippi (UM)  
Community First Research Center (CREW)  
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Fuzzy Cognitive Mapping Analysis  
Farmer 14

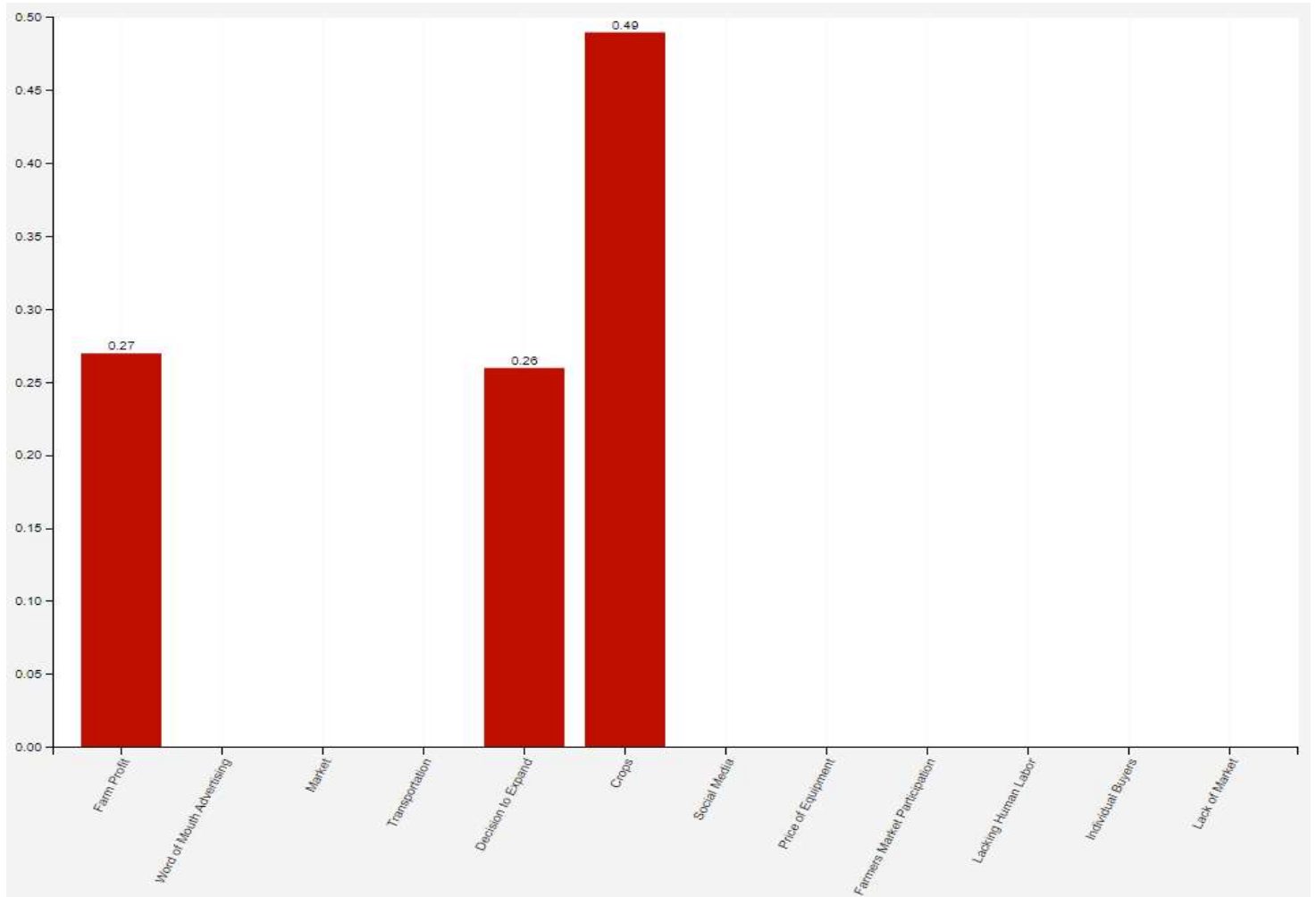
This analysis for Farmer 14 is part of a larger research project for the Mississippi Delta Council for Farm Worker Opportunities, Inc. Farmer 14 maintains a sweet corn farm, but is willing to expand into other types of produce crops for a guaranteed market as long as the current chemical drift issue is resolved. The following variables are changed in this reports's models to test their effects on Farmer 14's ability to expand into other crops:

- 50% decline in *Chemical Drift*
- 50% decline in *Price of Equipment*
- 100% increase in *Social Media* presence

Author interviewed Farmer 14 to gather the variables analyzed below and used Fuzzy Cognitive Mapping (FCM) to determine each variables' relationships. Each model listed in this report is based on the farm's current state from the farmer's perspective and reflects the predicted outcomes of each variable when one or two driving variables are changed.

Continue to the next page to view suggestions and corresponding models.

## Chemical Drift Decreased 50%

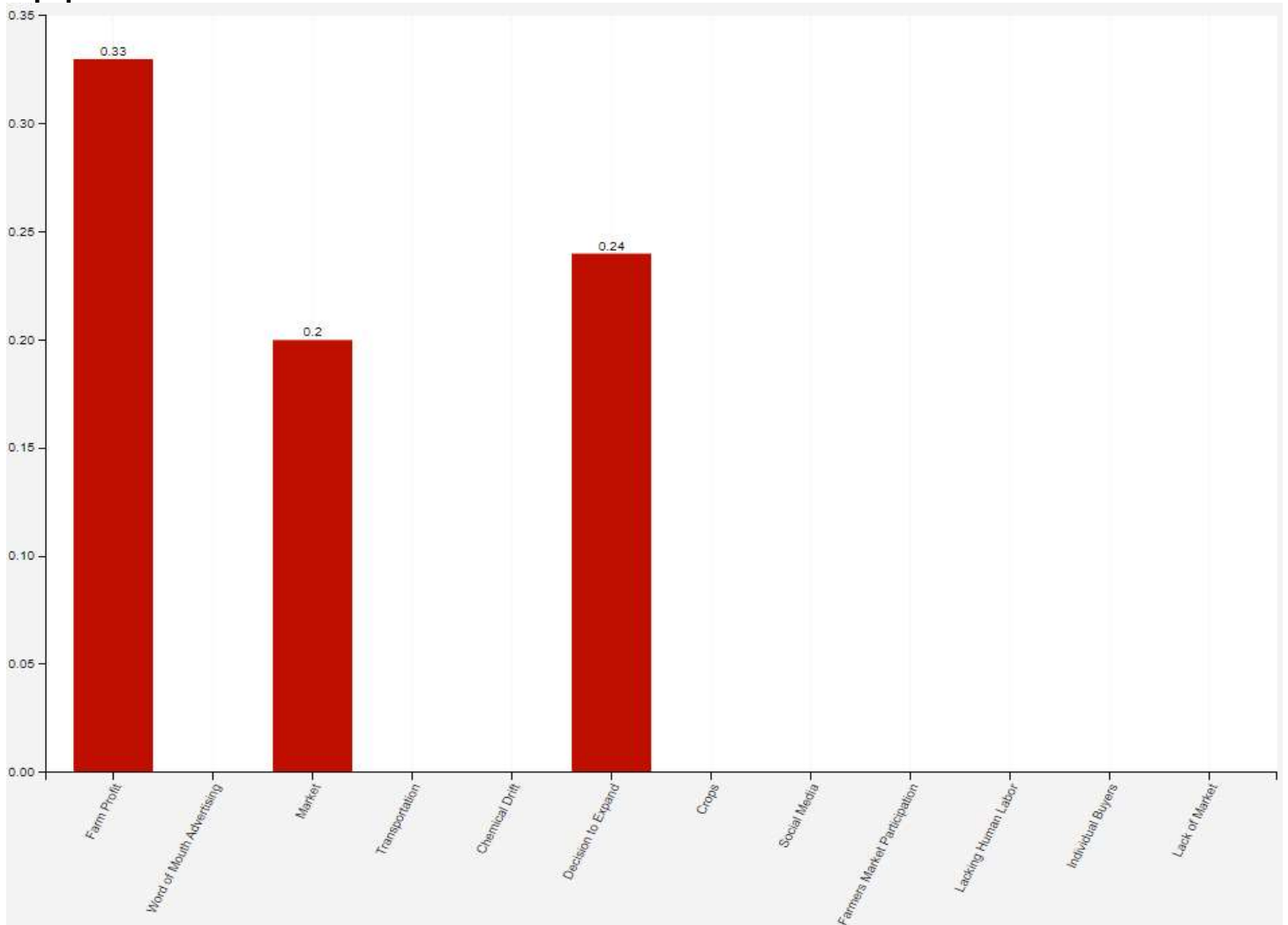


Decreasing *Chemical Drift* 50% affects three other variables. The following are the most significant changes:

- *Farm Profit* increases 27%.
- *Decision to Expand* increases 26%.
- *Crops* increase 49%.

If Farmer 14 can mitigate the effects of chemical drift on their crops by 50%, then Farmer 14 will likely see a 40-50% improvement in crops and 20-30% increase in profit and ability to expand into other crop types.

## Equipment Cost Decreased 50%

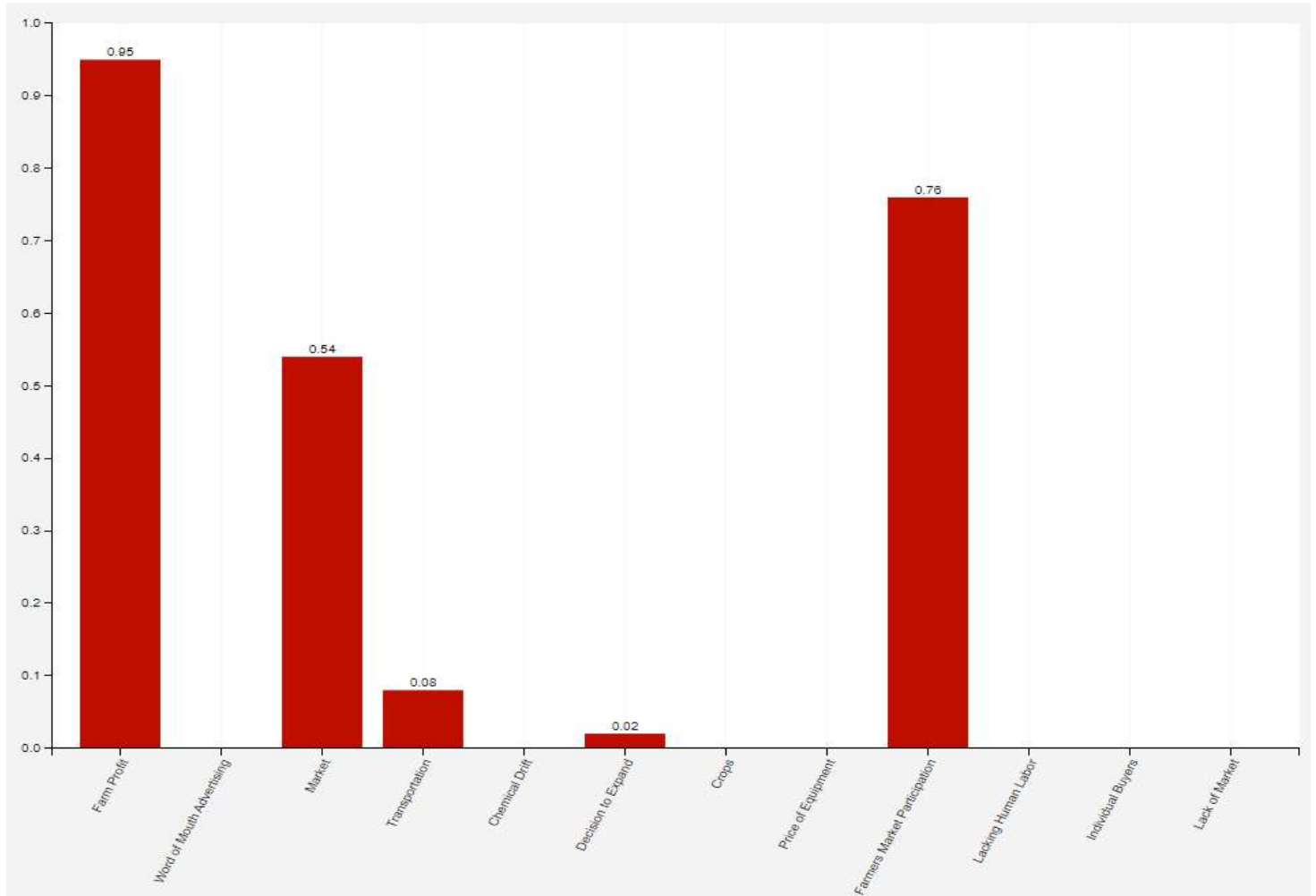


Decreasing *Price of Equipment* 50% affects three other variables. The following are the most significant changes:

- *Farm Profit* increases 33%.
- *Market* increases 20%.
- *Decision to Expand* increases 24%.

If Farmer 14 can find half-price equipment through resale avenues, Farmer 14 can purchase the equipment needed for expansion, while expanding the current market and increasing current farm profits.

## Double Social Media Presence



Increasing Social Media 100% affects five other variables. The following are the most significant changes:

- Farm Profit increases 95%.
- Farmers Market Participation increases 76%.
- Market increases 54%.

If Farmer 14 doubles their social media presence through other social media platforms, creating a website, or investing in online promotions, Farmer 14 likely can double their farm profit while expanding their market through individual buyers, farmers markets, and local food outlets.

## Conclusion

Farmer 14 listed *Chemical Drift*, *Price of Equipment*, and *Lacking Market* as the largest hindrances to expansion. Since *Chemical Drift* is mostly out of Farmer 14's control, UM CREW has recruited a policy associate from the UM Center for Population Studies & State Data Center to write a policy proposal for state and local legislators encouraging action to help mitigate effects of chemical drift on Delta produce farmers. In the short-term, Farmer 14 can implement chemical drift mitigation techniques. Using high-tunnels and greenhouses, planting in windbreak zones, planting barrier trees, and asking neighboring pesticide users for notification before spraying may help Farmer 14 expand into other crop types without losing their crops.

*Price of Equipment* also is uncontrollable, but may be circumvented through renting equipment from neighboring farms, buying at resale values, or applying for USDA small produce farm grants for equipment purchases.

Increasing Farmer 14's *Social Media* presence has a significant impact on *Market* and other variables affecting *Market*, like *Farmers Market Participation* and *Transportation*. Using social media and other online platforms has potential to expand Farmer 14's market and attract contracted markets, like CSAs, food box programs, and local restaurants. Farmer 14's refrigeration capabilities are ideal for this kind of expansion.

As this analysis shows, building connections with other farmers and community members for chemical drift mitigation,